

ACTUATOR LA12/LA12 PLC

Features:

- 12/24 V DC permanent magnetic motor
- Max. thrust 750 N
- Reinforced glass fibre piston rod
- Compact design
- Protection class: IPX1 or IP66
- Colour: black
- Straight cable's without plug
- Back fixture available in 2 different variants: 01 or 02 (factory mounted)
- Built-in limit switches (not adjustable)
- High-strength plastic housing protects motor and gear

Options:

- Reed-switch
- Potentiometer (max. 100 mm stroke length)
- Hall-sensor for (PLC-option)
- Long life absolute feedback (HALL - Potentiometer)
- Easy to use interface – with integrated power electronics for direct PLC connection
- Stainless steel inner tube and piston rod eye
- Back fixtures in aluminum or stainless steel
- Protection class: IP66 for the types 12xx00-xxxxxxx
- Protection class: IP66 for outdoor use (dynamic), furthermore the actuator can be washed down by a high pressure cleaner (IP69K – static) for the types 12xx/02/03-xxxxxxx

Usage:

- Duty cycle up to 20 % or max. 12 min./hour at 0 - 20°C ambient temperature
- Ambient temperatures: -20° to + 40°C
- Typical noise level dB (A) 55-57, measuring method DSIEN ISO 3746, actuator not loaded

TECHLINE
IMPROVING FLEXIBILITY



Thanks to the small size and outstanding performance, the LA12 actuator provides a practical and cost-effective alternative to traditional pneumatic systems and gear motors.

The LA12 is a member of the TECHLINE® Family it is characterized by its robust design allowing the actuator to be used in harsh conditions. The LA12 is designed to meet the challenge, based on the philosophy that it must be able to operate under extreme conditions.

The actuator is ideal for mobile "off-highway" equipment such as agricultural, forestry and construction machines.



iFLEX is the new sub-brand under which every TECHLINE® actuator with built-in intelligence is unified e.g. LINBUS and MODBUS.

For more information on iFLEX, please see: www.linak.com/techline



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Technical specifications:

| New Type | Old Type | Spindle Pitch (mm) | Thrust max. Push/Pull (N) | Self-lock max. (Push) (N) | Self-lock max. (Pull) (N) | Typical speed 0/full load (mm/s) | | Stroke length | | | Typical Amp. at full load (A) 24V - 12V | |
|-----------------|----------|--------------------|---------------------------|---------------------------|---------------------------|----------------------------------|----|---------------------|---|-----|---|-----|
| | | | | | | | | (in steps of 30 mm) | | | | |
| 12XX00-1XXX12XX | 12.1 | 2 | 750 | 750 | 375 | 14 | 5 | 40 | - | 130 | - | 4.6 |
| 12XX00-1XXX24XX | 12.1 | 2 | 750 | 750 | 375 | 14 | 6 | 40 | - | 130 | 2.2 | - |
| 12XX00-2XXX12XX | 12.2 | 4 | 300 | 300 | 150 | 27 | 16 | 40 | - | 130 | - | 2.5 |
| 12XX00-2XXX24XX | 12.2 | 4 | 300 | 300 | 150 | 27 | 16 | 40 | - | 130 | 1.5 | - |
| 12XX00-3XXX12XA | 12.3 | 6 | 200 | 200 | 100 | 40 | 28 | 40 | - | 130 | - | 2.2 |
| 12XX00-3XXX24XA | 12.3 | 6 | 200 | 200 | 100 | 40 | 28 | 40 | - | 130 | 1.0 | - |

Self locking ability

The H-bridge ensures that the motor is shorted when the relays are inactive. This is necessary to improve the self-locking of the actuator.



The Piston Rod Eye is only allowed to turn 0-90 degrees

Safety for the PLC connection

Integrated safety – The Integrated Electronic Overload Protection (EOP) circuit ensures that the actuator and machinery will not be damaged due to an unforeseen overload situation.

Furthermore the motor temperature is monitored, if the actuator is used with a higher duty cycle than recommended, the actuator will stop before it is overheated and damaged.

In all situations where the actuator stops because of safety reasons it gives a signal that can be used for error messages etc.

End-stop monitoring for the PLC connection

The built-in end-stop switch ensures that the actuator stops when reaching end of stroke, individual signals for both end-stops are available to the user.

Relative or absolute positioning for the PLC connection

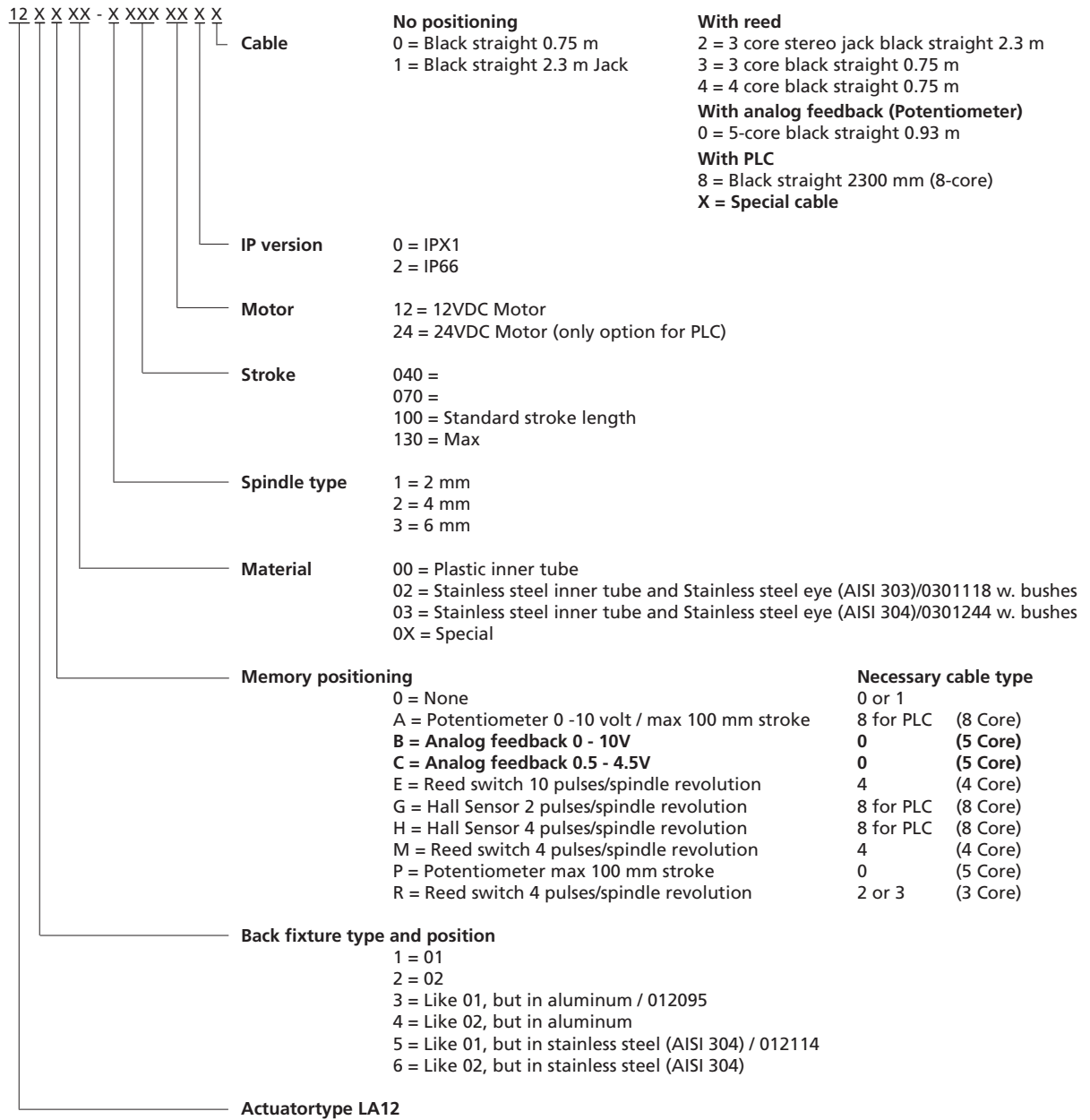
Relative positioning – By means of a magnetic disc and a hall sensor in the PLC-actuator, it is possible to have encoder pulses with an accuracy down to 0.5 mm per pulse. This signal can be connected directly to the PLC's standard digital input.
Absolute positioning – As an alternative the user can have a 0–10 V analogue signal from a potentiometer integrated in the PLC-actuator (max. stroke 100 mm). This signal can be connected directly to an analogue PLC input.

Low energy consumption

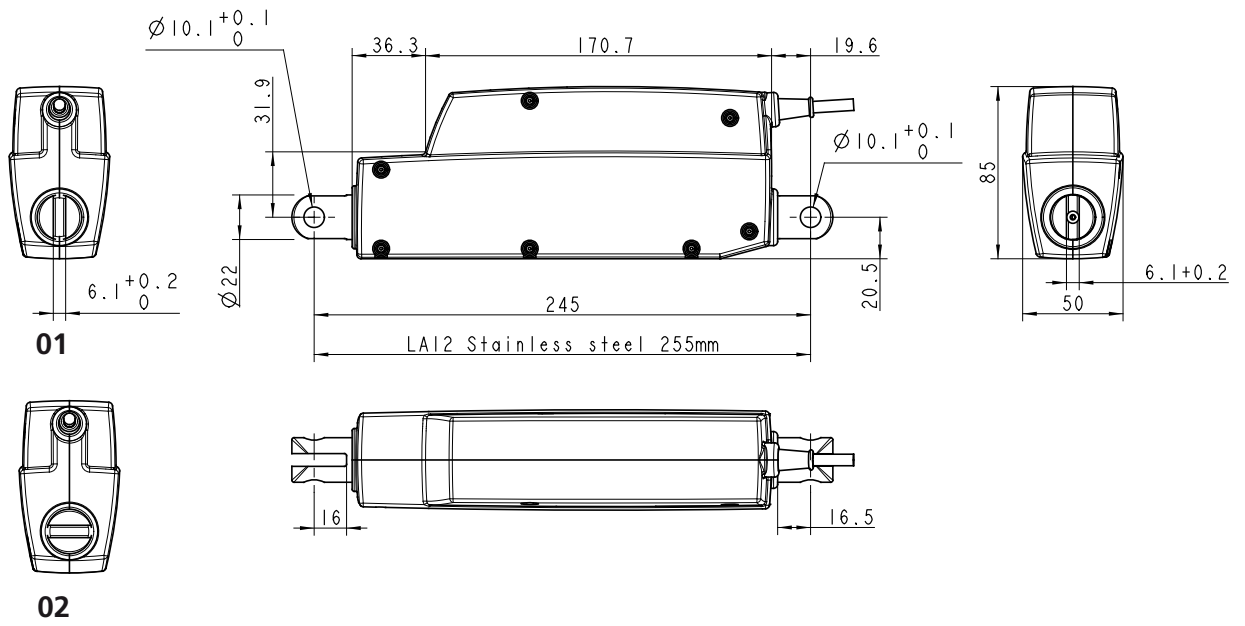
During recent years energy consumption has been more and more important to the end users of production equipment. Compared to pneumatic systems the energy consumption is considerably lower.

LA12

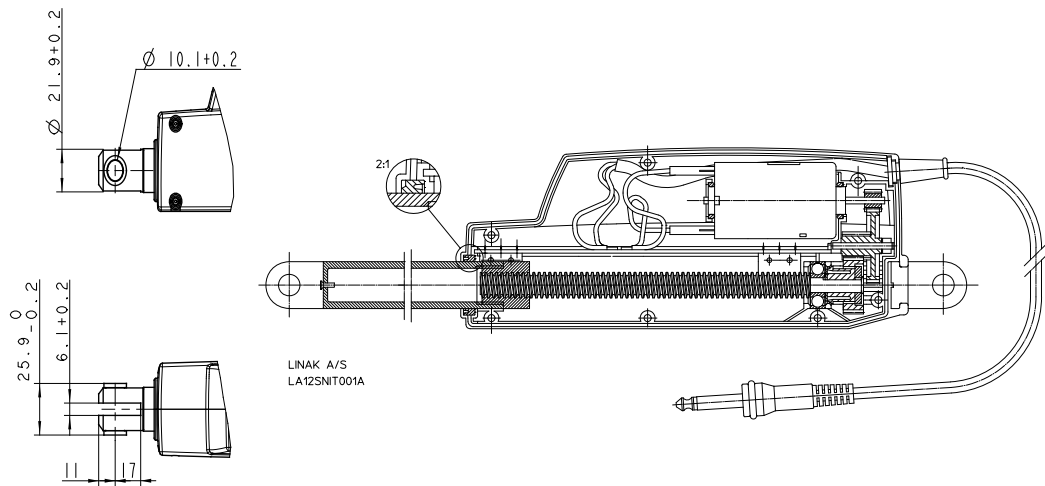
Ordering example:



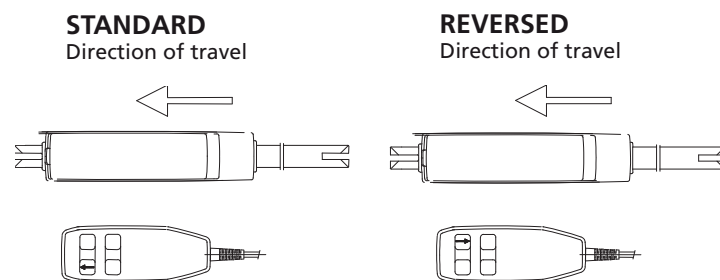
Dimensions:



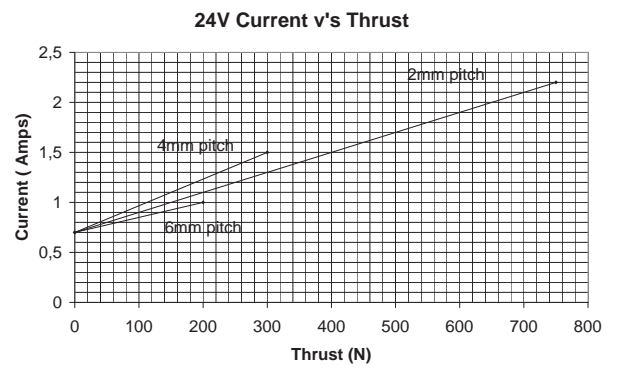
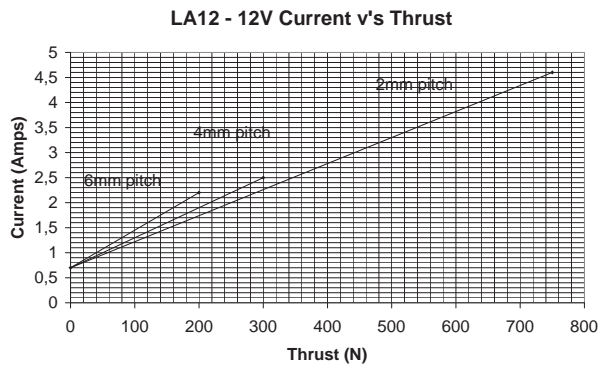
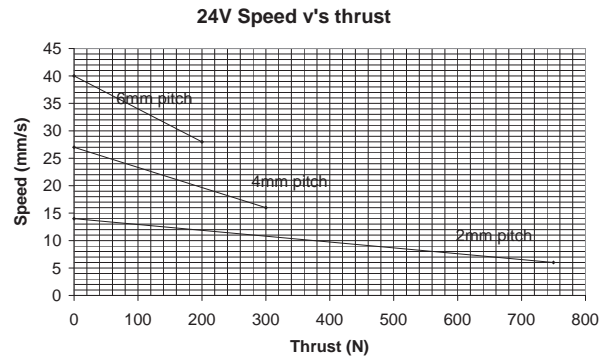
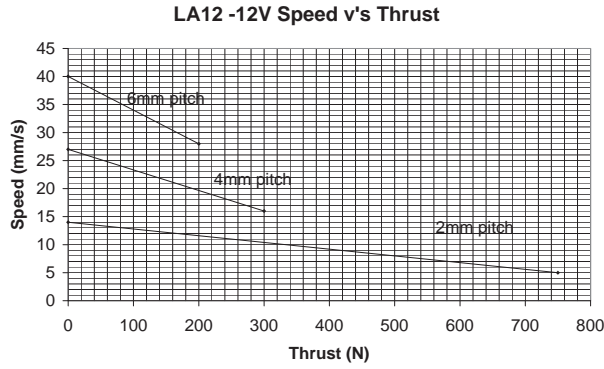
Piston rod eye:



Beware of the direction of travel when ordering LA12 with Jack Plug.



LA12 curves speed and current:



The above values are average values and made with a stable power supply and an ambient temperature of 20° C.

Actuator connections

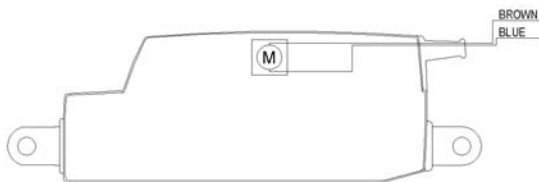


Figure 1
Basic Actuator without positioning
12xxxxxxx0

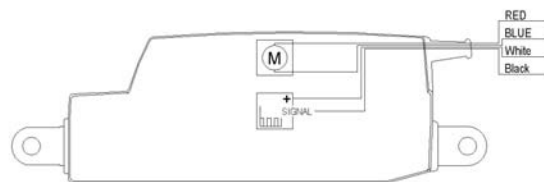


Figure 4
Actuator with Relative positioning
12Exxxxxxxx4 & 12Mxxxxxxx4

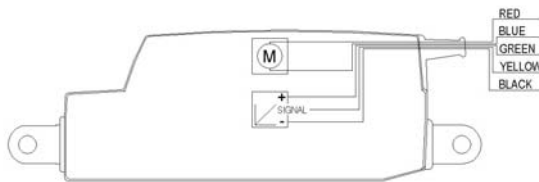


Figure 2
Actuator with absolute positioning
12Pxxxxxxx0

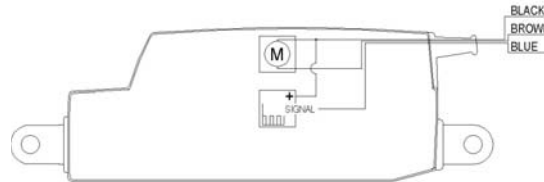


Figure 5
Actuator with Relative positioning
12Rxxxxxxx2/3

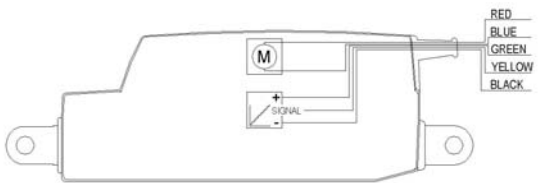


Figure 3
Actuator with absolute positioning
12Bxxxxxxx0 & 12Cxxxxxxx0

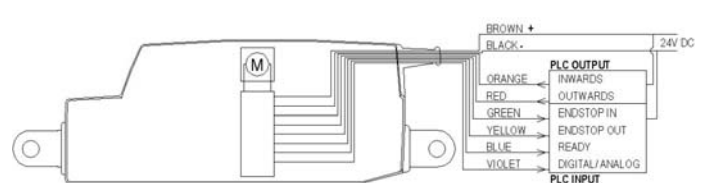


Figure 6
Actuator with built in H bridge
12x0/G/H/Axxxxxxx8

Environmental test – Climatic:

| Test | Specification | Comment |
|-----------------------|------------------------|--|
| Degrees of protection | EN60529 – IP6x | IP6X - Dust: Dust-tight, No ingress of dust. Actuator is not activated. |
| | EN60529 – IPx6 | IPX6 – Water: Ingress of water in quantities causing harmful effects is not allowed. Duration: 100 litres pr. minute in 3 minutes Actuator is not activated. |
| | EN60529 – IPx6-dynamic | IPX6 –Connected actuator: Actuator is driving out and in for 3 min. 100 (l/min) jet of water is placed at the wiper ring for 3 (min). |
| | DIN40050 – IP69K | High pressure cleaner: Water temperature: +80°C Water pressure: 80 bar Spray angle: 45° Spray distance: 100 mm Duration: From any direction 10 seconds of spraying followed by 10 seconds rest. Actuator is not activated. Ingress of water in quantities causing harmful effects is not allowed. |
| Salt mist. | EN60068-2-52 (Kb) | Dynamic salt spray test Salt solution: 5% sodium chloride (NaCl) 4 spraying periods, each of 2 hours. Humidity storage 20 days after each. Actuator is power up connected during the test. Exposure time: 10'000 cycles |

Environmental test - Mechanical:

| Test | Specification | Comment |
|---|---------------------|---|
| Low Temperature Soak | | Unit powered and operating for 96 Hrs @ -40°C |
| High Temperature Soak | | Unit powered and operating for 96 Hrs @ 105°C |
| Mechanical Shock (Handling) - Drop Test | BS2011 Part 2.1 Eb. | 400 mm drop onto Hardwood bench minimum 40 mm thick. Onto all practical edges and faces |
| Mechanical Shock (Operational) | | 100 off 400 m/sec ² 6 ms shock pulses - in 3 axes. |
| Vibration (Random) | | 24 hours in each ax. Breakpoint Freq. 10 Hz @ 0.005 g ² /Hz, 150 Hz @ 0.060 g ² /Hz, 220 Hz @ 0.080 g ² /Hz 350 Hz @ 0.040 g ² /Hz |
| Vibration (Resonant Search) | | 10 Hz - 2 KHz @ 4G, Rate = 1 octave/min |

Environmental test – Electrical, it does not apply for the PLC option

| Test | Specification | Comment |
|--|--------------------------|--|
| Radiated emission 10 m distance | CISPR 22 | 79 dB μ V (QP), 0.15 - 0.5 MHz 66 dB μ V (AV), 0.15 - 0.5 MHz 73 dB μ V (QP), 0.5 - 30 MHz 60 dB μ V (AV), 0.5 - 30 MHz |
| Radiated emission 10 m distance | CISPR 22 | 30 dB μ V/m, 30 - 230 MHz 37 dB μ V/m, 230 - 1000 MHz |
| Specification for radio disturbance and immunity | EN 55016-1-2 | |
| Electromagnetic fields | EN 61000-4-3 | 12 V/m, 80% AM, 1kHz 80 - 1000 Mhz 3 V/m, 80% AM, 1 kHz 1.4 - 2.0 GHz 1 V/m, 80% AM 2.0 - 2.7 GHz. |
| ESD | IEC 61000-4-2 | \pm 6 kV contact discharge \pm 8 kV air discharge |
| Burst transients | IEC 61000-4-4 | \pm 2 kV |
| Surge transients | IEC 61000-4-5 | \pm 2 kV (42 Ω output) |
| Radio frequency common mode | IEC 61000-4-6 | 10 Vrms, 80% AM 0.15 - 80 MHz |
| Power frequency magnetic field immunity test | IEC 61000-4-8 | |
| ESD | ISO 10605 | 8 kV contact discharge or 15 kV air discharge 330 pF + 2.000 Ω |
| Electromagnetic fields | ISO 11452-2 1 m distance | 30 V/m, 80%AM, 1 kHz 80 - 2.700 Mhz |
| Narrow Band 1 m distance | ISO 13766 | 52 - 42 dB μ V/m, 30 - 75 MHz 42 - 53 dB μ V/m, 75 - 400 MHz 53 dB μ V/m, 400 - 1000 MHz |
| Broad Band 1 m distance | ISO 13766 | 62 - 52 dB μ V/m, 30 - 75 MHz 52 - 63 dB μ V/m, 75 - 400 MHz 63 dB μ V/m, 400 - 1000 MHz |
| Conducted transients | ISO 7637-2:2004 | Pulses 1, 2, 3a, 3b, 4, 5 |

Complying standards, it does not apply for the PLC option

| Test | Specification | Focus on |
|------------------|--|---|
| 2004/104/EC | Automotive EMC Directive 2004/104/EC on electrical and electronic car components | VEHICLES AND MOBILITY |
| EN 12184 | Electrically powered wheelchairs, scooters and their chargers. Requirements and test methods | |
| EN/IEC 60204-1 | Safety of machinery – Electrical equipment of machines – Part 1: General requirements | INDUSTRIAL AUTOMATION |
| EN/IEC 60204-32 | Safety of machinery – Electrical equipment of machines – Part 32: Requirements for hoisting machines | <ul style="list-style-type: none"> • INDUSTRIAL AUTOMATION • PLATFORMS AND LIFTS |
| EN/IEC 60601-1-2 | Medical electrical equipment — Part 1-2: General requirements for basic safety and essential performance — Collateral standard: Electromagnetic compatibility — Requirements and tests | |
| EN/IEC 61000-6-1 | Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments | INDUSTRIAL AUTOMATION |
| EN/IEC 61000-6-2 | Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments | INDUSTRIAL AUTOMATION |
| EN/IEC 61000-6-3 | Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments | INDUSTRIAL AUTOMATION |
| EN/IEC 61000-6-4 | Electromagnetic compatibility (EMC) - Part 6: Generic standards - Section 4: Emission standard for industrial environments | INDUSTRIAL AUTOMATION |
| EN/ISO 10535 | Hoists for the transfer of disabled persons -- Requirements and test methods | |
| EN/ISO 13766 | Earth-moving machinery -- Electromagnetic compatibility | CONSTRUCTION |
| EN/ISO 14982 | Agricultural and forestry machines - Electromagnetic compatibility | <ul style="list-style-type: none"> • MOBILE AGRICULTURE • OUTDOOR POWER EQUIPMENT |
| ISO 7176-21 | Wheelchairs -- Part 21: Requirements and test methods for electromagnetic compatibility of electrically powered wheelchairs and scooters, and battery chargers | |

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